U.S. Department of Transportation
Federal Highway Administration

Federal Highway Administration
RESOURCE CENTER

Congestion Management Systems

Problem: Highway Capacity is Insufficient to Meet Growing Demand

More than 75 percent of our Nation's population lives in metropolitan areas. Since 1950, 86 percent of the population growth and two-thirds of job growth has occurred in suburban areas. This has resulted in an explosion of suburb-to-suburb trips. There has been a tremendous increase in the number of households and number of vehicles per households. Due to their dispersed pattern, transit has difficulty serving this new travel pattern. Rates of auto occupancy also have declined adding still more vehicles onto the road system. States have also had problems producing enough capacity improvements to keep up with the demand. The inability to build enough facilities to solve the growing problem demands an active approach to managing solutions to congestion and focusing on those that give us the most for our money.

Putting it in Perspective

- Nationwide, the Texas Transportation Institute (TTI) estimates the cost of congestion for the biggest 75 metropolitan areas was $67 billion in 2001, and for many of these areas, has continued to increase over time.
- 2 out of 5 urban interstate miles are considered congested.
- Traffic delays have more than tripled in the pa st 20 years.
- By 2020, the Nation's population is expected to grow by 16 percent, and vehicle travel is expected to increase by 42 percent.
- The effect of 5 congestion remedies; public transit, bus and carpool lanes, traffic signal coordination, incident management and freeway ramp meters have lowered the average delay per commuter from 58 to 50.5 hours. Complete use of the strategies could cut it to 45 hours.

Solution: Focus on the Most Effective Strategies

What is a Congestion Management System (CMS)?

A CMS is a systematic process for defining what levels of congestion are acceptable to the community; developing performance measures for congestion; identifying alternative solutions to manage congestion; prioritizing funding for those strategies and assessing the effectiveness of those actions. Congestion Management Systems are a required component of the metropolitan planning process in urbanized areas over 200,000 in population.

Education and dissemination of noteworthy CMS practices are key components necessary for the further adoption of congestion management systems by different communities. Recognizing the need for further training and technical assistance on Congestion Management Systems, the FHWA Resource Center developed a workshop that provides an overview of a CMS and its components and highlights noteworthy practices across the country.

Successful Applications: States' Results Demonstrate Success

Hidalgo County, TX MPO

Hidalgo County hired a consultant to collect Global Positioning System (GPS) travel times. They received a Geographic Information System (GIS) with a congestion index calculated every two seconds along their roadways. The added insight from this data allowed them to identify a number of problems that could be tackled by access management and signal retiming. These two solutions reduced the number of capacity additions in their Transportation Improvement Program from 40 to 12 percent, effectively expanding the number of roadways they could correct within their budget.

Wilmington, DE

Wilmington is an example of a good overall CMS that complements the rest of the planning process. It has just three easy-to-understand performance measures. They produce an annual effectiveness evaluation of the planning process, which includes their strategies to help focus efforts on those that will do the most good in each corridor. Efforts are guided by a CMS subcommittee, which includes operations specialists in the process.

Durham NC

One of the other attributes that many areas struggle with is how to get strategies/projects from their CMS to compete for funding with every other project in the area. Durham prioritizes the projects coming from their CMS with a formula to add them into the transportation Improvement Program. The formula takes into account existing and projected future levels of congestion and the number of commuters that are affected by the delay.

Houston, TX

Metropolitan Planning Organizations (MPOs) are not the implementing agencies for many of the strategies chosen from a CMS. However, those MPOs in air quality non-attainment areas must show that travel demand management and operational strategies are being implemented before or at the same time as capacity improvements. Houston requires the local implementers to commit to these measures and demonstrate that they will have them done by the time the capacity project is done.

Benefits

- Creates performance measures to track the changes in congestion over time,
- Provides better information to decision-makers,
- Directs funding to most cost effective actions,
- Provides an opportunity for those operators of the transportation systems, such as transit operators, traffic engineers and traffic management systems to collaborate with the planners developing long term capacity improvements and those trying to control growth in travel demand.

Additional Resources

Congestion Management Systems Workshop
(available, contact Resource Center Planning Team)

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FHWA Publication No: FHWA-RC-BAL-04-0015